(65)

B.Tech. (Sem. - 7th/8th)
OPERATING SYSTEMS
SUBJECT CODE : DE - 3.1 (D.E. - III)
Paper ID : [A0335]

[Note : Please fill subject code and paper ID on OMR]

Time : 03 Hours   **Maximum Marks : 60**

Instruction to Candidates:

1) Section - A is **Compulsory**.

2) Attempt any **Four** questions from Section - B.

3) Attempt any **Two** questions from Section - C.

Section - A

$(10 \times 2 = 20)$

Q1)

a) Explain Time sharing systems. Write one advantage of it.

b) Define the term system call. List at least four system calls.

c) Distinguish b/w user level and kernel level threads.

d) Distinguish b/w logical and physical address space.

e) Write at least two advantages of virtual memory.

f) Draw the diagram of a acyclic graph directories.

g) Write at least two advantages of contiguous memory Allocation.

h) Distinguish between long term and short term scheduler.

i) Define Access matrix in context of protection.

j) List four necessary conditions for a deadlock to occur.

Section - B

$(4 \times 5 = 20)$

Q2) Define the term operating system. Write at least four functions of an operating system.

Q3) What do you understand by the layered approach of an operating system. What are the advantages and disadvantages of this approach.

Q4) Explain the four necessary conditions for a deadlock to occur.

Q5) Explain the method of contiguous allocation I detail. Also write its advantages and disadvantages.

Q6) Assume that we have the following work load shown. All five processes arrive at time 0, in the order given, with the length of the CPU-burst time given in milliseconds

Process	Burst time
P1	10
P2	29
P3	3
P4	7
P5	12

Consider the FCFS, SJF and RR (quantum = 10ms) scheduling algorithms for this set of processes. Which algorithm would give the minimum average waiting time?

Section - C

$(2 \times 10 = 20)$

Q7) Explain the various disk scheduling Algorithms in detail.

Q8) Explain various OS Components in detail.

Q9) Under what circumstances page fault occur. Consider the following reference string
1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3. 7, 6, 3, 2, 1, 2, 3, 6
Find the number of Page Faults with FIFO, Optimal Page replacement and LRU with four free frames which are empty initially. Which algorithm gives the minimum number of page faults?